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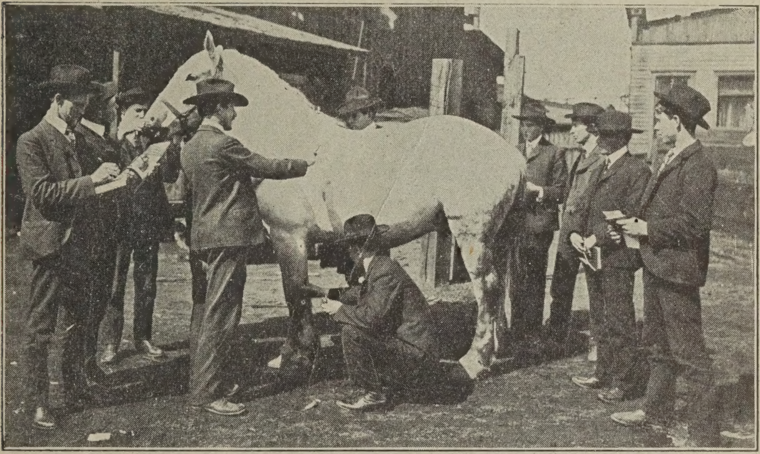
THE UNIVERSITY OF TENNESSE
SERIES V—NO. 5—SEPTEMBER 1904

COURSES IN AGRICULTURE
AT THE
UNIVERSITY OF TENNESSEE

PRACTICAL COURSES OF INSTRUCTION IN THE ART AND SCIENCE OF

AGRICULTURE FOR SOUTHERN FARMERS

Ten Weeks' Winter Course, January 5 to March 15, 1905
Four Years' Course, Commencing Sept. 15, 1904. See page 16



STUDYING THE POINTS OF A DRAFT HORSE

One and two years' practical courses of ten weeks each are offered in the following subjects:

1 Agriculture and Chemistry: Soil culture, farm crops, fertilizers and cereal judging.
2 Animal Husbandry: Breeding, feeding and judging live stock.
3 Dairy Husbandry: Butter and cheese making, milk testing, and dairy machinery.
4 Horticulture and Botany: Pruning, gardening, orcharding, spraying and plant diseases.
5 Veterinary Science: Anatomy and physiology, hygiene and treatment of diseases.
6 Mechanic Arts: Wood and iron working and farm buildings.

NOTE—Short course students should report promptly for enrollment and classification to Room 1, Morrill Hall.

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Cherokee Bluff from the University Farm

COURSES IN AGRICULTURE
AT THE
UNIVERSITY OF TENNESSEE

AN EDUCATIONAL OPPORTUNITY FOR SOUTHERN FARMERS

The chief interests of the South center in agriculture. While manufacturing industries have developed wonderfully during the past few years, the South is still and always will remain an agricultural country. The extensive manufacture of raw materials in the section where they are produced is an incentive to agricultural development. Land is cheap in the South and climatic and soil conditions are favorable to the production of almost all useful crops. The soil has been barely scratched; its productive capacity under modern methods of agriculture are just now being realized. The South offers to the young man unequaled opportunities. With a comparatively small outlay of capital he can procure agricultural holdings now of small value which may be made very profitable within a few years. Through educated effort he can acquire a competency from the soil and still remain at home. Do the young men of Tennessee realize these opportunities, or are they looking elsewhere?

In the short course provided each winter at the University of Tennessee ten weeks of practical instruction is given in agriculture, animal husbandry, dairying, horticulture, and mechanic arts, for the benefit of persons who desire to increase their knowledge of agriculture and its related sciences and are unable to take the full four years' course. The object of the short course is to teach farmers to think and to furnish them with information relative to farming operations, so that they can carry on their business on a more scientific, practical and paying basis.

Time. The course of 1905 begins January 5 and ends March 15. There will be two terms of 10 weeks each, so that those who desire may return a second year and in a measure complete their studies.

Expenses. The necessary expenses, not including railroad fare, are between $40 and $50—a sum which any industrious young man can earn during the remainder of the year. Tuition is free, and the only charge the University makes is $7 as an incidental and breakage fee. Board in private houses in Knoxville costs from $2.50 to $3.50 per week, so that this item amounts to $30 or $35. Syllabi of lectures are provided in place of textbooks for $2, and the white duck suits used in the dairy cost about $3. The farmer or his son can take the course for $4 or $5 per week, and thus acquire information of the greatest value for but little more than his living expenses at home.

Entrance Requirements. Anyone 16 years of age or over who has a fair country school education will be admitted to these courses. Some of our best students have been 30 to 40 years of age. There are no entrance examinations. Many persons whose educational opportunities have been restricted fear that they will be unable to appreciate the course. This is unfortunate, since the work is so practical and the lectures are so simple as to be understood by anyone.

Course of Study, 1905. The subjects taught in the short course have been arranged so as to show those comprising the first and the second year's work. Whenever possible the lectures are illustrated by means of the stereopticon, and the student receives a syllabus of each lecture for future reference. The subjects are as follows:

FIRST YEAR

- AGRICULTURE—20 hours
  - Farm Crops
  - Soil Culture
- ANIMAL HUSBANDRY—40 hours
  - Breeds
  - Breeding
  - Feeding
- STOCK JUDGING—Practice 90 hours
  - Beef Cattle
  - Dairy Cattle
  - Sheep for Wool and Mutton
  - Swine
- DAIRYING—150 hours
  - Theory and Practice of Dairying
  - Receiving and Separating Milk
  - Care and Handling of Cream
  - Butter Making and Marketing
  - Pasteurizing and Bottling Milk
  - Cheese Making and Curing
  - Milk Testing
  - Boiler and Engine
- HORTICULTURE—60 hours
  - Pruning and Grafting
  - Orchard and Small Fruits
  - Market Gardening
- VETERINARY SCIENCE—60 hours
  - Animal Anatomy and Physiology
  - Hygiene and Horse Shoeing
  - Judging Horses
- AGRICULTURAL CHEMISTRY—20 hrs.
  - Soils of Tennessee
  - Fertilizers: Their use and application
- MECHANIC ARTS—40 hours
  - Use and Handling of Tools
  - Wood Working
  - Construction of Farm Conveniences

SCHEDULE OF THE SHORT COURSE, 1905—FIRST YEAR

MORNING

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8:00 9:00	Agr. Chemistry	Agr. Chemistry	Animal Design	Farm Managem'nt	Breeding	Breeds of Stock
9:15 10:15	Horticulture	Farm Crops	Horticulture	Feeding	Veterinary Science	Veterinary Science
10:15 11:45	Horticultural Practice	Mechanic Arts Practice Estabrook Hall	Horticultural Practice	Mechanic Arts Practice Estabrook Hall	Veterinary Science U. Farm	Veterinary Science U. Farm
11:45 1:15	Noon					

AFTERNOON

1:15 2:00	Excursions to Stock and Fruit Farms, Etc.	Dairying U. Farm		Dairying U. Farm		Dairying U. Farm
2:00 6:00		2:00–6:00 Dairy Practice U. Farm	2:00–5:00 Stock Judging U. Farm	2:00–6:00 Dairy Practice U. Farm	2:00–5:00 Stock Judging U. Farm	2:00–6:00 Dairy Practice U. Farm

SECOND YEAR

AGRICULTURE—70 hours
- Soil Physics
- Forage Crops
- Grasses and Clovers
- Farm Management

DAIRYING—150 hours
- Advanced Work
- Butter Making
- Cheese Making, etc.
- Dairy Bacteriology
- Assigned Reading, etc.

FEEDS AND FEEDING—90 hours
- Practical Work in the Barns
- Feeding Horses, Beef and Dairy Cattle, Sheep and Swine

HORTICULTURE—60 hours
- Spraying
- Forestry
- Nursery Work
- Orchard Management

AGRICULTURAL CHEMISTRY—20 hrs.
- Study of Soils and Fertilizers

BOTANY—20 hours
- Plant Nutrition
- Plant Diseases

CEREAL JUDGING—90 hours
- Studies in Seed Selection and Improvement
- Seed Testing
- Judging Corn, Wheat, Oats, etc., by Score Card

VETERINARY SCIENCE—60 hours
- Diseases of Animals
- Casting and Restraining Animals

MECHANIC ARTS—40 hours
- Blacksmithing
- Electrical Appliances, etc.
- Plumbing and Soldering

BOOKKEEPING—20 hours
- Farm Accounts

Each course includes 450 lectures and exercises in the foregoing subjects. Where the topics appear in the first year's course, the second year's course will constitute advanced work in these subjects.

SCORING SWINE

Special Courses. Since many farmers can not get away for 10 weeks, special one and two weeks' courses are offered, as follows:

Cereal judging and practical stock feeding. January 16 to 28.

Stock judging and dairying. January 30 to February 11.

The entrance fee in these courses will be $2.00.

Lecture Sheets. The syllabi of lectures given in the 10 weeks' course will be furnished at cost to students of the one and two weeks' courses.

Stock Judging Trips. Several excursions will be made to neighboring stock farms. The cost of these trips is little and the benefit is great, as the student sees the method pursued by successful breeders of the various classes of live stock.

Rural Science Club. Special lectures, under the auspices of the Rural Science Club, will be delivered once a week by members of the faculty and eminent men from different sections of the State.

The Library. The agricultural library, which is always accessible, contains over 5000 books and pamphlets and has on file about 100 agricultural papers. The bulletins of all the experiment stations are available, and students are expected to use them freely.

SCORING SHEEP

State Scholarships. Short course students can obtain State scholarships, which entitle them to free tuition, by applying to their senators or representatives in the Legislature or to the president of the University.

AGRICULTURE

Equipment. Morrill Hall, the agricultural building, contains the laboratories and class rooms for agriculture, horticulture, chemistry and botany, and the library and offices of the Experiment Station.

Farm Office. A two-story brick building contains the farm office, seed laboratories, etc.

The University Farm. The University farm comprises 145 acres. It is admirably situated, in close proximity to the University and the city, and is well equipped. A three years' rotation is practiced and more than 1200 test plats are maintained.

The Lectures. A large number of carefully prepared lectures are given on agriculture and farm crops, many of which are illustrated by stereopticon views.

Forage Crops. The splendid series of experiments in connection with the Tennessee Experiment Station are utilized in the instruction in farm crops, forage crops, soil management, etc. The student can gather from these object lessons facts which would otherwise take him years to acquire.

Cost of Producing Farm Crops. A careful record is kept of the cost of all the crops grown at the farm, thus showing the student which crop produces the largest amount of digestible nutrients at the least cost.

Grasses and Clovers. Special attention is given to grasses and clovers. Many varieties are grown on the University farm to determine their relative merits for meadows, pastures and lawns. Some very valuable results with clovers have already been obtained.

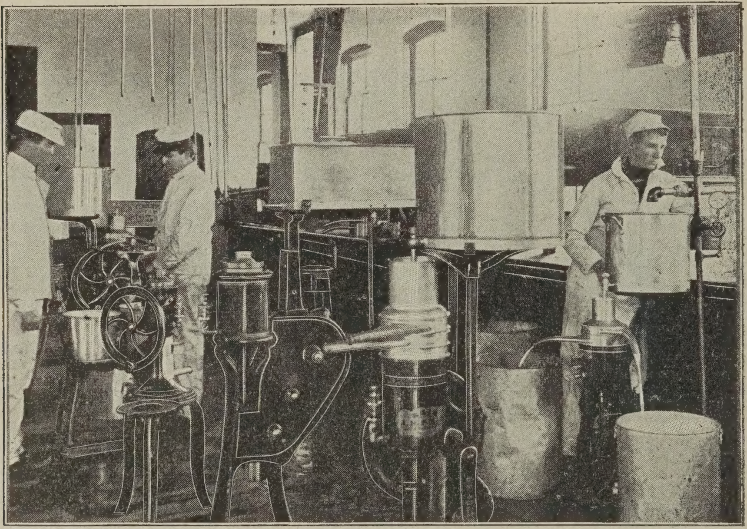
Judging Corn

Soil Physics. Two rooms in Morrill Hall are equipped for the study of the physical properties of the soil. Four hours per week with second year men will be devoted to this work. The time will be occupied with lectures, laboratory and field work, and reports on assigned reading. The course includes a consideration of the origin and formation of soils, types of soils and their adaptability for different crops, soil texture and influence of cultivation on the same, tillage and its effect on water content and mechanical condition, conditions affecting the movement of water and air, the distribution of plant roots in the soil, etc.

Cereal Judging. Score cards have been prepared and a large number of samples of cereals have been preserved for student instruction. The course is designed to teach Tennessee farmers how to select and improve their corn, wheat, oats and other farm crops with but little extra labor and expense. Selections made on the University farm show that the yield of wheat may be increased four bushels or more per acre, and work is now in progress with corn and other crops.

THE DAIRY SCHOOL

Equipment. The work of the dairy school is conducted in a special building on the University farm, fitted with all modern appliances. It is a brick structure, with a slate roof and cement floors, and is heated by steam and lighted by electricity. The students carry on the practical operations of a creamery and cheese factory.



RUNNING THE SEPARATORS

Dairy Barn and Herd. In conjunction with the dairy school work the student is taken into the model dairy barn, with its iron stalls, cement floors, etc., where a herd of 45 pure-bred and grade Jersey and Holstein cows is kept. He takes part in the preparation of the food and assists in various ways about the work, and thus obtains a working knowledge of the dairy business. He is also required to examine the herd record and study the influence of individuality on economic yield. The course is extremely practical and is directly applicable to conditions in Tennessee.

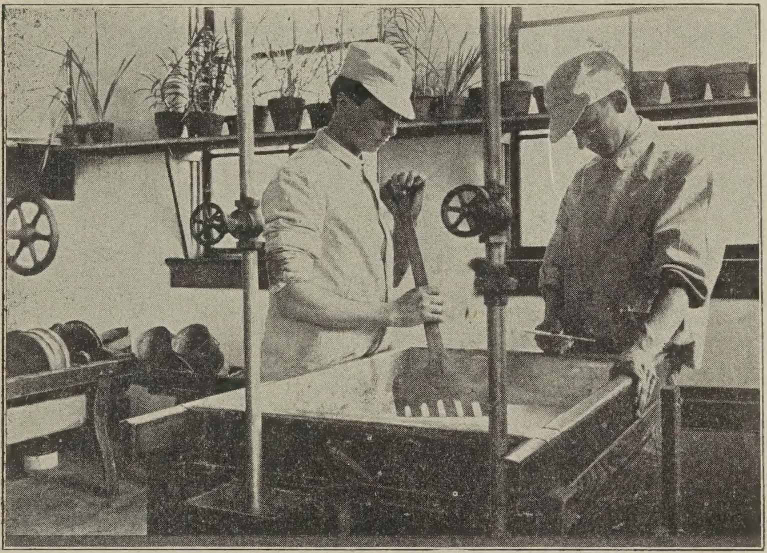
The Lectures. Each day a syllabus is given out and an hour spent in discussing some dairy topic. More than thirty of these sheets are given to each student, so that at the end of the term he has a text-book on the subject.

The Course Eminently Practical. After this the students, who are clad in white duck suits, and taught to be scrupulously clean and neat about their person and work, are divided into squads; some to receive and weigh the milk, some to separate it, and others to churn, make cheese or test the milk for butter fat. There are many different styles of machines in the building and each student works with all of them.

Separating. He must set up the separator, run the milk through, care for the cream, and wash the machine and put it back in the condition in which he found it.

Churning. He must churn the cream into nice, granular butter, and salt, work, and print or pack into large tubs.

Cheese Making. He must manufacture the raw milk into Cheddar cheese in a scientific manner. He also receives instruction in the manufacture of Edam cheese and other fancy cheeses.



MAKING CHEESE

Milk Testing. The student must examine the samples of milk brought from the barn and drawn from the separators, churns, cheese vats, etc. He finds thus that one cow gives three per cent of fat while another gives six, that one cow gives twice as much butter as another while the cost of maintenance is the same, and that part of the cows in nearly every dairy herd are unprofitable.

Boiler and Engine. Each student is required to take his turn at firing the boiler and running the engine.

Commercial Dairying. As the milk from the herd is sold, the student has an opportunity to learn how to pasteurize milk and prepare and bottle it for distribution.

Dairying is one of our most profitable industries and will develop marvelously as soon as we have a sufficient number of educated dairymen.

ANIMAL HUSBANDRY

Equipment. There are two large barns and a shed for cattle feeding besides a hog barn. Barn No. 1 is used as a stable for horses and beef cattle and implements. Barn No. 2 contains the dairy stable, with stalls for 30 cows and a stock judging room. As the University owns some fine blooded stock plenty of specimens are available for instruction.

Breeds. The origin, history and adaptability to Southern conditions of the different breeds of horses, cattle, sheep and swine constitute an important part of this course.

Breeding. The importance and feasibility of improving the native stock through the introduction of improved sires is demonstrated by slaughter tests. The profit from pursuing rational lines of breeding is demonstrated and the results of defects in the parental types are brought out by contrast.

Weighing Rations for Beef Cattle

Practical Feeding. Feeding, or Animal Nutrition, considers the influence of various food-stuffs on the animal body. The lessons are enforced by a visit to the slaughter house. The utility of the various organs is explained, as well as their relation to animal form and function.

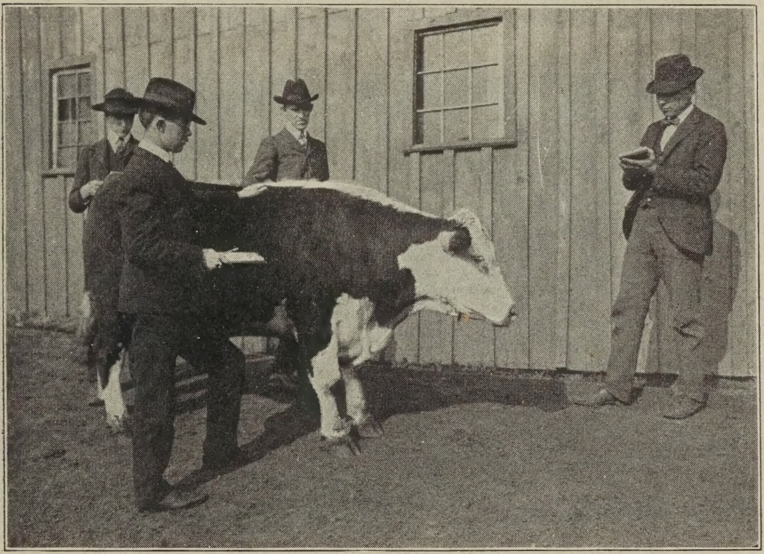
Each winter feeding experiments are in progress at the University farm with beef and dairy cattle, sheep and swine, which furnish useful object lessons to the amateur feeder. Excursions are often made on Saturdays to neighboring farms to examine the various breeds and the methods of breeding and feeding employed.

Students who take Practical Feeding are required to feed all the different classes of live stock and record the results. After weighing up and distributing the rations they figure out the amount of digestible nutrients given to each animal, the cost of the food, the value of the products returned in the form of meat, milk or growth, and the value of the manure. This course is invaluable to one who is interested in the maintenance of live stock.

VETERINARY SCIENCE

This work will consist of lectures and demonstrations on the following subjects:

Anatomy. This embraces the study of the bones, articulations, muscles, digestive tract, and nervous, circulatory and respiratory systems of domestic animals. The lectures will be illustrated by charts and specimens.



Scoring a Beef Animal

Physiology. Special attention will be given to digestion in order that the student may understand the subject of feeds and feeding.

Horseshoeing. This subject will include the relation of the foot to the entire limb; care of the shod and unshod foot; and shoeing to overcome forging, interfering, stumbling, etc.

Hygiene. Instruction will be given in modern sanitary measures and regulations; disinfection of animals, stables, utensils, etc.; and measures employed to combat and control contagious diseases.

Breeds of Horses will embrace a study of the characteristics of the primitive horse and the gradual steps of development. Special attention will be given to the classical breeds; also the hackney, coacher, American trotter, thoroughbred and hunter.

Dentition. Under this head will be taught the methods of telling the ages of domestic animals.

Bandaging, Casting and Restraining Animals. Each individual student will be given an opportunity to do practical work in these lines, in order to familiarize himself with modern methods and apparatus for handling domestic animals.

Diseases of Animals. Lectures and clinical demonstrations will be given on the symptoms and treatment of some of the common diseases of farm animals.

Judging Horses and Mules. The student will be given exercises in scoring and judging horses and mules of different types. This work will be carried on chiefly in the large stables in Knoxville.

Root-grafting the Apple

STOCK JUDGING

An Ideal Necessary. Our breeders must have a standard or ideal in breeding to secure uniformity, quality and correct type in their animals, and it is the aim of the short course to create correct ideals.

What the Course Includes. The course includes a consideration of the points of the different breeds of live stock, their location and value, and the characteristics sought. Students are required by means of the score card to determine the value of animals for specific purposes. They are required to examine light and heavy horses and mules, beef and dairy cattle, heifers and calves. They also work with sheep for wool and mutton and with swine for bacon and lard.

HORTICULTURE

Equipment. In addition to the University orchards, the department is equipped with a conservatory containing a fine collection of ornamental plants, a range of hotbeds and cold-frames, modern spraying apparatus for fungous diseases and for insects, a well equipped grafting room, and all necessary implements and tools for efficient horticultural work.

Orchards. The University orchards are entirely separate from the University farm. The tract includes 90 acres, of which about 40 acres are devoted to horticulture. In the plantation are about 1000 fruit trees, embracing representative varieties of apple, pear, peach, plum, cherry and quince, a hundred varieties of strawberries, and a good collection of grapes, raspberries, blackberries and other small fruits. Experiments in spraying and pruning, in vegetable growing with commercial fertilizers, and other important lines of work of practical value to the fruit grower, afford abundant opportunity for illustration and are of great interest to students.

Top-grafting in an Old Orchard

The Course. The first course in horticulture deals with the propagation, cultivation and management of small fruits and the farm orchard, with a few lectures and exercises in vegetable growing. It includes practice in budding, root- and top-grafting, the making of cuttings, etc. Each student is required to make 100 apple grafts, and the exercises in other lines are sufficient to familiarize the student with all important fruit growing operations. The insect and fungous enemies of the orchard, with remedies, will receive especial attention.

A special course in horticulture is offered to students who are qualified to take the work, provided at least one-half the time of the student be given to the subject. In this course commercial orcharding, with supplemental crops, will receive especial attention. Intending students should correspond with the professor of horticulture regarding entrance requirements.

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AGRICULTURAL CHEMISTRY

Chemical Laboratory. The chemical laboratory occupies three rooms in Morrill Hall. The equipment is sufficient for general agricultural chemical work, such as the analysis of soils, fertilizers, feeds, mineral waters, minerals, etc.

The Course. The object is to present the most important principles which concern plant food and soil fertility. The theory and practice of using commercial fertilizers for the farm, the garden and the orchard, and of preserving and using stable manure, are discussed somewhat in detail.

Chemical experiments and tests for soil acidity and the determination of some common minerals, are made before the class. A number of lantern views have been prepared especially for this course.

BOTANY

The Course. The course in botany is designed to give the student some knowledge of the structure and functions of the various parts of flowering plants and a general idea of plant diseases. It is a study of roots, stems, leaves, buds, flowers and fruits, the illustrations being taken from the garden and orchard. The course is intended to make clear to the student many of the practices of agriculture and horticulture.

MECHANIC ARTS

Equipment. The shops for work in manual training are located in Estabrook Hall, in the southeast corner of the University campus.

Wood Working. This course is designed to cover as rapidly and yet as thoroughly as possible the use and care of all ordinary carpenters' tools. Students will build actual models of various styles of silos, barns, etc.

Blacksmith Shop. The course in the blacksmith shop teaches the student the proper management of his fire, the various heats of iron and the methods of working it in the different forms, and gives practice in welding. Every farm should have a blacksmith shop. The course aims to give young men enough training to enable them to make any ordinary repairs on the farm, thus saving time and money. If the student cares to go further he will be given practice in steel working and tempering so that he can make, dress and temper his own chisels, punches and similar tools on the farm.

Pipe Fitting. Sufficient practice is given in pipe fitting so that much of the new pipe work on the farm and probably all of the repair work can be done by the young man who has taken this course.

THE FOUR YEARS' COURSE

The four years' course in agricultural science is designed to meet the most pressing needs of Southern farmers. As all successful agricultural practice is based on the related sciences of Chemistry, Botany, Geology, Meteorology and Physics, it is deemed essential to lay considerable stress on these subjects. The endeavor is made to combine theory and practice in the work of the agricultural course.